



Tornus mienisi, a new species of *Tornus* from the Eastern Mediterranean (Mollusca: Prosobranchia)

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KEY WORDS: *Tornus mienisi* n. sp., Mediterranean Sea, Atlantic Ocean.

RIASSUNTO Viene descritta *Tornus mienisi* n. sp. del Mediterraneo orientale. La nuova specie è comparata con *T. subcarinatus*, del quale si discute la variabilità protoconchiale.

ABSTRACT *Tornus mienisi* n. sp. is described and figured from the Eastern Mediterranean. It is compared with the closest congeners.

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In 1981 MIENIS announced the finding of *Cochliolepis costulatus* (de Folin, 1870), a West African gastropod, from off Acco along the Mediterranean coast of Israel and at the same time he also wrote (1981: 388): "A closely related, but still unidentified species of *Cochliolepis* is frequently encountered in very fine beachdrift". This species was mentioned before by MIENIS (1973: 18) as *Cochliolepis* spec. Mienis send some of the material of this new "*Cochliolepis*" to the first author who at that time noted that it did not belong to the American genus *Cochliolepis* Stimpson, 1858, as redefined and described by Moore (1972) but looked, surprisingly, like an aberrant form of *Tornus subcarinatus* (Montagu, 1803) and might be a variety of that species. Thus around ten years ago the discussion came to an end and therefore BARASH & DANIN (1992: 62) cite: "A new species of *Cochliolepis* was discovered by H.K.Mienis. The description and data concerning this species will be published by the discoverer". To our knowledge this was never done.

Note that the species mentioned as *Cochliolepis costulatus* by BARASH & DANIN (1992: 62, fig.61) is not the species announced by MIENIS (1981: 387, fig.2) under that name, but rather the new species discussed here.

In the meantime the other authors came across the same species and finally it was decided that we were confronted with an undescribed species of the genus *Tornus* Turton & Kingston, 1830, not belonging to the genus *Cochliolepis* Stimpson, 1858, the type-species of which viz. *Cochliolepis parasitica* Stimpson, 1858, is described in detail by MOORE (1972: 103) as a smooth species devoid of any pronounced sculpture.

A study of the literature did not result in a positive identification of this highly sculptured species. It did not seem to be an

Indopacific immigrant species although many such species are known from Israel and adjacent countries.

During our study we considered, of course, the possibility of a variety of form of the well-known *Tornus subcarinatus* (Montagu, 1803). One such a variety is described as *Adeorbis subcarinatus* var. *interrupta* Marshall, 1902, as follows (MARSHALL, 1902: 192): "Shell more depressed and quoit-shaped, with three carinations instead of six- one underneath, one at the base, and one surrounding the suture of the penultimate whorl. Sometimes there is a fourth ridge round the periphery. Found in the Channel and Scilly Islands with the type, and probably in other places, but rare".

Although we did not see examples of this variety and we note that it is not mentioned by FRETTER & GRAHAM (1978) in their recent review of the British Prosobranchs either, it is clear that the description does not correspond at all with the specimens we have and therefore they cannot belong to Marshall's species (or variety). We therefore consider our specimens to belong to a new species which we describe below as

Tornus mienisi spec. nov. (Figs 2, 4, 5)

Shell: Rather depressed and heavily sculptured, with a flange of material around the periphery of the shell. Whorls: Embryonic whorls smooth, about 1 1/4 to 1 1/2 of 410 - 450µm in diameter, sharply delimited from the teleoconch whorls, which number one and a half or slightly more. Sculpture: Axial ribs and spiral carinae as in *Tornus subcarinatus*, but the carina along the suture of the penultimate whorl is less pronounced as is the one surrounding the umbilicus. Umbilicus: Very wide, opening unto the embryonic whorls and sculptured with axial ribs

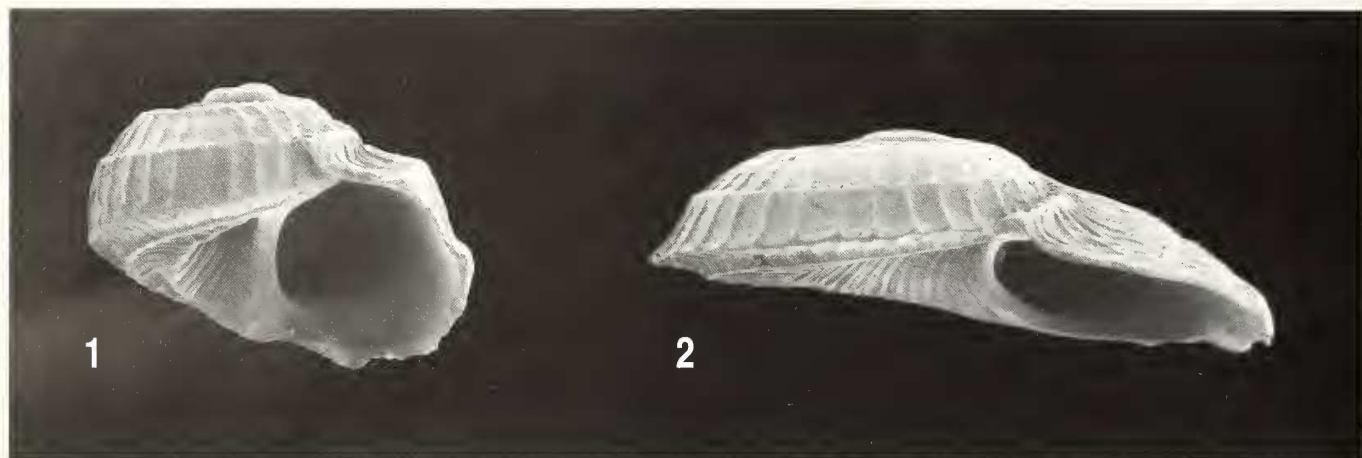


Figure 1 *Tornus subcarinatus* (Montagu, 1803). Specimen from the Kerkennah Islands (Tunisia). Side view (30x). Figure 2 *Tornus mienisi* spec. nov. Paratype from Iztuzu (Turkey). Side view (30x).

descending from the base of the shell (see Fig. 4).

Dimensions: 2.2–3.0 mm x 0.6–0.7 mm.

Derivatio nominis: Named after Dr. H. K. Mienis, Hebrew University, Jerusalem, Israel, who first found the species and considered it as new to science.

Holotype: 3.0 mm x 0.7 mm, Haifa Bay, Israel, -45 mtr. in coll. NNM 57247.

Paratypes: NW off Acco, -54m, leg. Haifa Sea Fisheries Stat. no. 722 (HUJ 35578, 5 sp.); Off Gaza, -27m, leg. HSFS. no. 538 (HUJ 35579, 2 sp.); Tantura beach, leg. G. Haas, July 1949 (HUJ 35580, 4 sp.); Shavey Ziyyon, beach, 1950 (HUJ 35581, 9 sp.); Haifa, Kishon beach, leg. G. Haas, March 1937 (HUJ 35582, 4 sp.); Shavey Ziyyon, beach, leg. T. Felsenburg, Febr. 1972 (HUJ 35583, 7 sp.); Tel Aviv, Sheraton beach, leg. H.K. Mienis, Sept. 1971 (HUJ 35584, 2 sp.) all Israel, in coll. Hebrew University Jerusalem.

Haifa Bay, -20 m to -30 m (18 sp.) in coll. Carrozza; Haifa Bay, -45m (AD13141, 3 sp.), Shavey Ziyyon beach, Israel (3 sp.) and Tel Baruch (Tel Aviv) (AD 22621, 2 sp.) in coll. v. Aartsen. Iztuzu, Turkey, leg. H. Kinzelbach, beach, April 1989, 1 sp. in coll. NNM 57248; *ibid* (AD 24220, 13 sp.) in coll. v. Aartsen; 10 km W of Mersin, Turkey, beach, July 1986 (18 sp.) in coll. Menkhorst; *ibid*. (AD 21089A, >25 sp.) in coll. v. Aartsen; Akkum, Turkey, beach (AD 22064, 2 sp.) in coll. v. Aartsen.

Discussion

The main difference between *Tornus mienisi* and the widely distributed *Tornus subcarinatus* is the much more depressed shape of the former. Whereas the breadth is less than two times the height of the shell in *Tornus subcarinatus* (see Fig. 3) it is more than three times the height in *Tornus mienisi* (see Fig. 2). Also *Tornus mienisi* is clearly bigger at the same number of teleoconch-whorls (one and a half) viz. c. 2.5 mm whereas *Tornus subcarinatus* is about 1.8–2.0 mm. Of course the very characteristic flange of shell material along the periphery of the shell is the most discriminating character.

Compared with *Tornus subcarinatus* as found all over the

entire Mediterranean, including Haifa, Tel Baruch (Israel), Kizkalesi (Turkey), several islands of the Greek Archipelago and some fifty other localities, the new species *Tornus mienisi* has a different protoconch, consisting of more than one and a half whorl with a total diameter of 410–450µm, whereas the protoconch of *Tornus subcarinatus* is only 320–360µm and consists of less than one whorl (See Fig. 5 and Fig. 6).

At this point we have to make an interesting observation concerning *Tornus subcarinatus*. Comparing the dimensions of the protoconch we have taken of this species with those reported in the literature we find a number of discrepancies. Fretter & Pilkington (1970: 22, 23 fig. 28a) give a sketch from which we estimate the diameter of the (smooth) protoconch to be about 200–250µm at 3/4 whorl. LEBOUR (1936: 552, pl. 1 fig. 15) also gives a sketch where the smooth part ends at about 3/4 whorl. The diameter cannot be estimated from her text or figure.

Recently FRETTER & GRAHAM (1978: 230 fig. 192) write: "The protoconch has c. 1.5 whorls sharply delimited from the teleoconch, its surface is smooth and its total diameter is 500µm–550µm". The figure (*op. cit.*: 192) gives 1 3/4 whorls and a diameter of about 350µm whereas the total shell diameter is just over 1 mm. Clearly something is wrong with the magnification (=66x) here.

ADAMS & KNUDSEN (1969: 43 fig. 22) give a figure of *Tornus subcarinatus* var. *robustior* var. nov. from the West African coast, from which we estimate 1 1/2 to 1 3/4 whorls and a diameter of 420µm for the embryonic whorls.

The protoconch in all our samples of *Tornus subcarinatus* from Atlantic localities we have studied has about 1 1/2 whorls, with a smaller diameter of the first half whorl and a diameter of the total (smooth) part of about 420 µm (see Fig. 7). Our samples ranged from Agadir (Morocco) in the south to Scheveningen (Netherlands) in the north along the Atlantic coast. The separation between the two types is apparently rather sharp: specimens from Tarifa (Spain) belong to the Atlantic "form", whereas specimens from Tanger (Morocco)

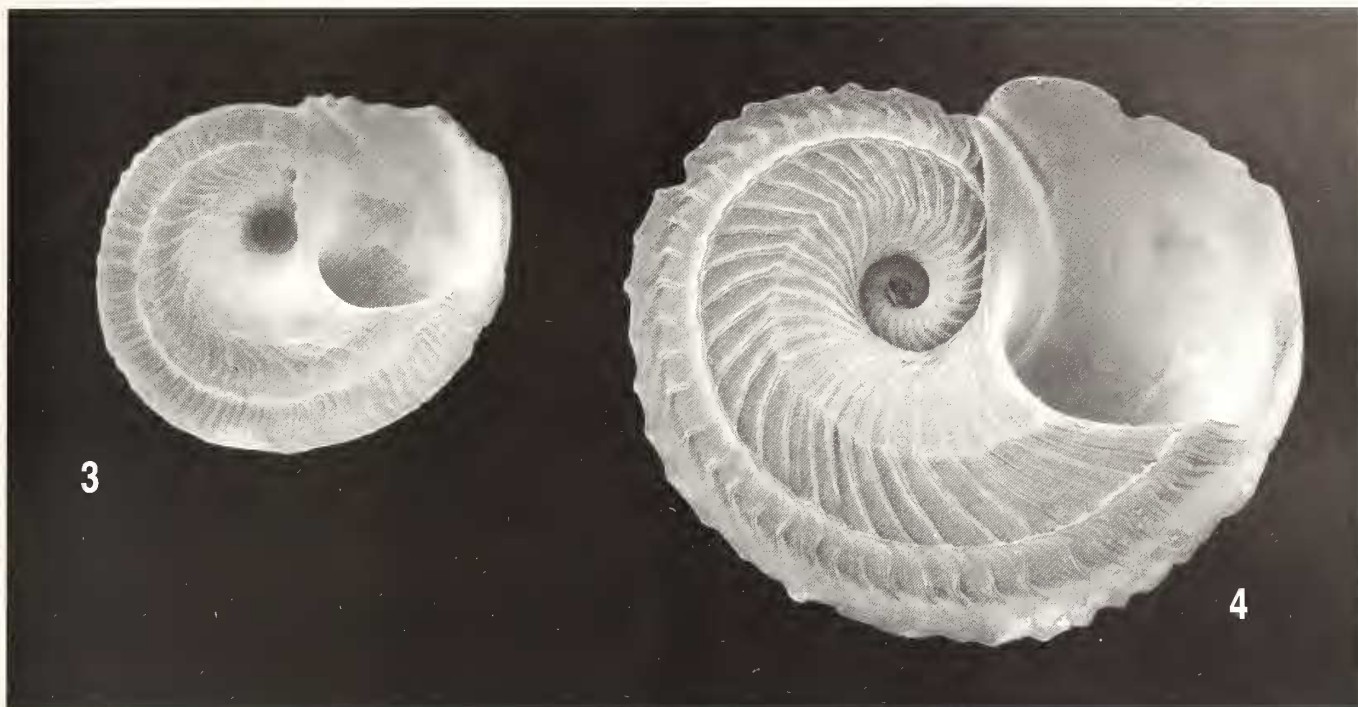


Figure 3 *Tornus subcarinatus* (Montagu, 1803). Specimen from the Kerkennah Islands (Tunisia). Underside (30x). Figure 4 *Tornus mienisi* spec. nov. Holotype from Haifa Bay (Israel). Underside (30x).

and Algeçiras (Spain) clearly belong to the Mediterranean "form".

This cannot explain the differences in the literature but it does show that the Atlantic and the Mediterranean samples of *Tornus subcarinatus* differ in details of the protoconch although all protoconchs studied are curved along the same (logarithmic) spiral.

We do not take a standpoint in the question whether Atlantic and Mediterranean *Tornus subcarinatus* really belong to one and the same species. Anatomical research is necessary.

MONTAGU (1803: 438, pl.7, fig.9) described his *Helix subcarinatus* from Atlantic (British) localities and so that name should be reserved for the Atlantic "form".

As for the nomenclature of the Mediterranean "form" we wish to point out that *Delphinula pusilla* Calcare, 1839 is a synonym of *Delphinula laevis* Philippi, 1844, according to CALCARA himself (1845: 31) and not a synonym of *Tornus subcarinatus* as indicated by JEFFREYS (1869: 216) and MONTEROSATO (1878: 97; 1884: 109).

The only other name of relevance is *Cyclostrema miranda* Bartsch, 1911. This has been shown by Moore (1969: 169 fig. 1) to be based on *Tornus subcarinatus* of unknown origin. As far as can be estimated from the drawings the figured specimen belongs to the Atlantic form and the name *Cyclostrema miranda* is therefore a synonym of *Tornus subcarinatus* s.s.

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Figure 5 *Tornus miemsi* spec. nov. Holotype. Topview. Figure 6 *Tornus subcarinatus* (Montagu, 1803). Same specimen as Figs 1 and 3. Topview. Figure 7 *Tornus subcarinatus* (Montagu, 1803). Specimen from Laredo (N-Spain). Topview.

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